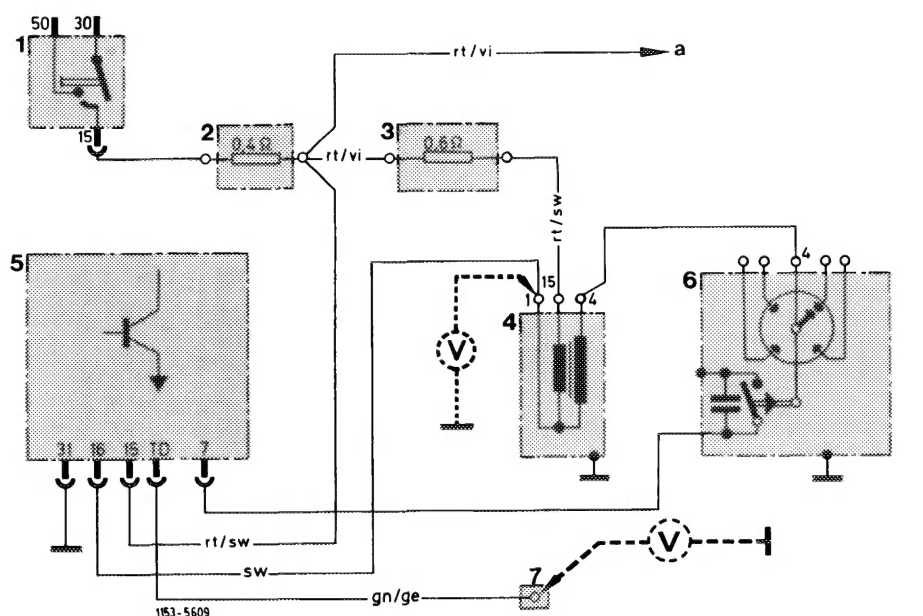


# Test values

Battery rest potential		approx. 12 V
Starting voltage		approx. 10 V
Voltage ignition coil (terminal 1) (breaker contact closed)		0.7–1.5 V
Voltage ignition coil (terminal 15) (breaker contact opened)		approx. 11.8–13 V
Terminal TD to ground		max. 0–0.3 V
Ignition coil primary (between terminal 1 and 15) at + 20 °C		0.38–0.45 Ω
Ignition coil secondary (terminal 1 and 4)		8–11 kΩ
Pre-resistance	blue fastening clamp at + 20 °C	0.35–0.45 Ω
	metallic fastening clamp at + 20 °C	0.55–0.65 Ω

# Conventional testers

Voltmeter, ohmmeter



Wiring diagram for SI transistorized coil ignition system with standard switching unit

- |                               |                          |              |             |
|-------------------------------|--------------------------|--------------|-------------|
| 1 Ignition starter switch     | 6 Ignition distributor   | Line colors: |             |
| 2 Pre-resistance 0.4 $\Omega$ | 7 Cable connector with   | ge = yellow  | sw = black  |
| 3 Pre-resistance 0.6 $\Omega$ | test terminal TD         | gn = green   | vi = purple |
| 4 Ignition coil               | a To terminal 16 starter | rt = red     |             |
| 5 SI standard switching unit  |                          |              |             |

### Testing pre-resistances

Loosen line connection on one connection of resistance to be tested.

Measure resistance with ohmmeter.

Pre-resistance	Resistance nominal value at 20 °C
0.4 Ω	0.4 ± 0.05 Ω
0.6 Ω	0.6 ± 0.05 Ω

Values measured on warmer pre-resistances will be slightly higher.

### Testing ignition coil

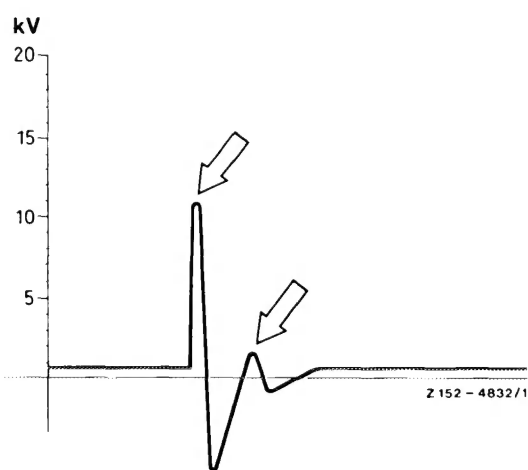
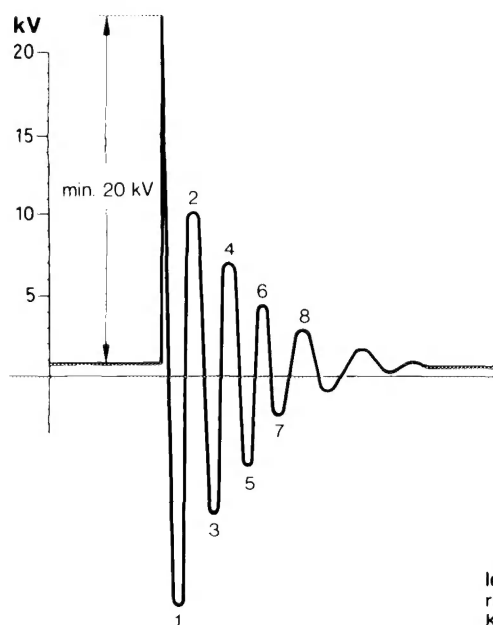
#### Insulation test

Separate ignition coil from vehicle circuit by removing terminals 1, 15 and 4.

Connect engine tester to ignition coil. Perform test according to operating instructions.


Whenever possible, test ignition coil by means of a conventional engine tester under operating conditions. Such a test will discover, above all, insulation damage, ground and interturn shorts.

Evaluate potential gradient on scope in accordance with the following oscillogram.



lefthand oscillogram in order  
righthand oscillogram poor  
KV = potential

<i>Selection</i>	Line-up
<i>Fault</i>	Voltage under 20 kV, less than 8 voltage peaks
<i>Cause</i>	Interturn interruption, interturn short or insulation damage against ground
<i>Remedy</i>	Replace ignition coil



**Gefährliche Hochspannung!**  
Vorsicht bei Arbeiten an der Zündanlage

**Danger! High voltage**  
Observe caution when working on the ignition system

**Danger! Haute tension**  
Attention lors de travaux au système d'allumage

### Evaluation of scope display (oscillogram)

The ignition coil is perfect, if the first dying-out wave attains 20 kV and upon which at least 8 voltage peaks will follow. If this value is not attained, replace ignition coil.

### Resistance test

Resistance nominal value at 20 °C

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Primary winding measured between terminal 1 and terminal 15	0.38–0.45 $\Omega$
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Secondary winding measured between terminal 1 and terminal 4	8–11 k $\Omega$
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Measuring values are slightly higher with a warmer ignition coil.

### Testing breaker contacts

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For perfect operation of transistorized coil ignition system the transitional resistance on contact breaker should not be too high. To check, measure voltage drop on connected contact breaker.

Connect voltmeter : + to cable connector  
(= terminal 7 or TD on  
switching unit)  
—to ground

Voltage indication max. 0.3 volt.

If this value is exceeded, install a new contact breaker.

### Testing switching unit and line connections

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The test serves to check for presence of voltage on switching unit and whether with pertinent activation the switching transistor will block the primary voltage of the ignition coil or let it pass. The primary current will not be directly measured, but for the sake of simplicity the voltage drop caused by this current.

The test is performed with engine stopped and ignition switched on.

Test voltage stop at input of resistance  $0.4\ \Omega$  with contact breaker closed.

Connect voltmeter: + at input pre-resistance  $0.4\ \Omega$   
—to ground

The voltage drop may amount to max. 0.4 volt.

If the voltage drop is too high, check cable and cable connections.

### Testing standard switching unit (Si)

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#### Checking line connections

Pull off 4-pole connection plug on switching unit and test with voltmeter whether the 4-point round plug terminal 15 and terminal 16 is connected to a battery voltage of 11.8–13 volts with ignition switched on.

Connect voltmeter: + on terminal 15 or terminal 18  
—to ground

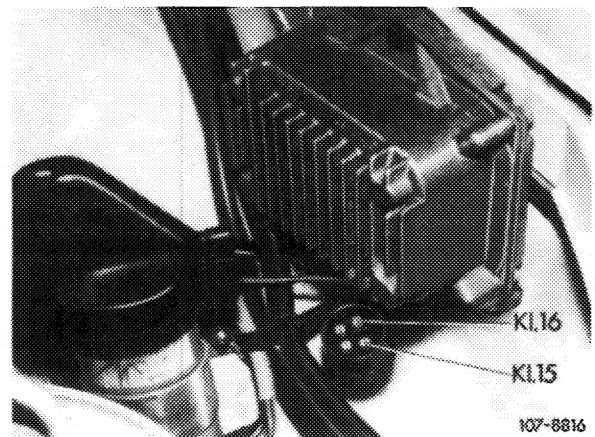
If there is no voltage, test all connections from input resistance  $0.4\ \Omega$  to switching unit.

Then put back 4-point round plug on switching unit.

#### Voltage value with contact breaker opened

The test serves to test the blocking characteristics of transistor.

Connect voltmeter: + at terminal 1 ignition coil  
—to ground



Battery voltage should rest against terminal 1, that is, readout = 11.8–13 volts.

If not, replace switching unit.

#### **Voltage value with contact breaker closed**

Voltmeter connected as before.

Voltage at terminal 1 ignition coil = 0.7–1.5 volt.

With contact breaker closed, 3.6–4.6 volts are measured at terminal 15 of ignition coil, with contact breaker opened, battery voltage.

If not, replace switching unit.

Layout of transistorized coil ignition with standard unit in model 114.060

- 1 Standard switching unit
- 2 Ignition coil
- 3 Pre-resistance  $0.4 \Omega$
- 4 Pre-resistance  $0.6 \Omega$
- 5 Cable shoe for test connection (cable color green/yellow)

